Testing the User Interface Standard: UCB Survey Results

A key factor in raising rates of enabling power management in office equipment and consumer electronics (and thus saving energy) is easy recognition of the symbols, lights, and controls that are associated with power controls. Together, these objects make up the power control user interface. The only way to confirm that these user interface elements are successful is to test them with real users. We describe here preliminary and limited tests of people's recognition of these user interface elements. These tests[1] were designed and undertaken by graduate students from the University of California's School of Information Management and Systems in close cooperation with LBNL. The tests were performed in late 2001.

While the data from this collaboration was useful, the process of creating the survey instruments themselves was also instructive. The sample sizes were small, so the results may not be conclusive, but they are indicative and provide good anecdotal evidence. There were two separate testing exercises, and both survey reports are available on the web[2].

Summary of Results

The goals of the tests were to identify the subjects' present understanding of user interface elements, preferences for them, associations, and expectations of device behavior. The first test had 27 questions, many multi-part, and was given to 37 subjects. The second test had 43 questions, also many of which were multi-part, and was given to twelve subjects. While the sample sizes in these experiments were not large enough to be definitive, some clear results emerge.

- The subjects expectations were similar across device types.
- Subjects are comfortable pressing the ⏻ button — it rated highly as the solution for any power state change task.
- The moon rated only in the middle of eleven sleep symbols tested for its association with the idea of sleep, but nevertheless, its meaning is clear.
- People readily understood that the sleep button puts the device into sleep, but relied on the power button for wake up.
- The subject's responses mostly makes sense in light of what people see on current products.
- To check power status, people "poked" notebooks but observed copiers. (If future keyboards don't wake up PCs from sleep, some re-education will need to occur).
- No clear common mental model was apparent across the subjects.

From this we glean the following implications:

- With common mental model already present, it seems safe to impose one that makes sense to product designers so long as it is not inconsistent with widespread perceptions in a way that may cause problems (e.g. a user action turning a machine off unexpectedly).
- The user interface standard was largely ratified by the user expectations and preferences revealed.
- No fundamental problems with the standard was raised.

A more detailed summary is forthcoming.

---

[1] This was in the context of SIMS 271, a course in the School of Information Management and Systems about Quantitative Research Methods for Information Management. The instructor was Rashmi Sinha, a lecturer in the department.

[2] As of May 20, 2002, the reports **and** the original survey instruments were still available at: http://www.sims.berkeley.edu/courses/is271/f01/projects/PowerControls/